BIOREGULATION OF BIOFILMS FORMED BY WATERBORNE OPPORTUNISTIC BACTERIA

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Biofilm formation and their resistance to disinfection have been recognized as important factors that contribute to the survival and persistence of opportunistic bacteria in drinking water. In this regard, it seems clear that the future success in controlling biofilms depends on the combination of complementary technologies including microbial natural product discovery. The main goal of this study was to investigate the effect of *Acinetobacter calcoaceticus*, *Burkholderia cepacia*, *Mycobacterium mucogenicum* and *Staphylococcus* sp. metabolites resultants from planktonic single-species growth, on each other biofilm control.

Drinking water isolated bacteria were identified by 16S rRNA gene sequencing. Biofilm control was assessed using the microtiter plate technique, by means of CV and XTT staining to assess, respectively, biofilm mass and metabolic activity. The disc diffusion assay was also performed to detect antimicrobial activity of the molecule metabolites.

Although none of the metabolites presented antimicrobial activity, biofilm formation by *A.calcoaceticus*, *B.cepacia* and *M.mucogenicum* was reduced by their presence, causing dispersion. Only *Staphylococcus* sp. biofilm formation was not affect by the metabolites from the other bacteria. Concerning the effect of metabolites on biofilm metabolic activity, those produced by *A.calcoaceticus* and *M.mucogenicum* reduced the activity of the different bacteria, by-products from *B. cepacia* reduced activity of *A.calcoaceticus* and *Staphylococcus* sp. biofilms, and *Staphylococcus* sp. metabolites only reduced the metabolic activity of *M.mucogenicum* biofilms.

This investigation demonstrates the biofilm bioregulatory effects of metabolite molecules produced by the tested waterborne bacteria, showing the potential of natural antimicrobial compounds against microbial-based problems.